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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,350	03/08/2001	Trenton John Gale	1121-CA	4188
20284	7590	04/19/2004	EXAMINER	
CIRRUS LOGIC, INC. CIRRUS LOGIC LEGAL DEPARTMENT 2901 VIA FORTUNA AUSTIN, TX 78746			DINH, PAUL	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/803,350

Applicant(s)

GRALE ET AL.

Examiner

Paul Dinh

Art Unit

2825

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 8 and 10-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-6, 8 and 10-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This non-final office action is a response to the applicant amendment with RCE filed on 3/11/04.

#### *Claim Objections*

Claim 11 is objected to because "implemented using by changing a ..." is redundant.

#### *Claim Rejections - 35 USC § 102*

*The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:*

*A person shall be entitled to a patent unless –*

*(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*  
*(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.*

1. Claims 1-2, 4-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Davis (USP 6367003) who discloses a modulator/IC/method comprising:

(Claim 1 and similarly recited claims 4-6, 8)

a modulator (sigma-delta modulator in summary, fig 7) for receiving sample values and generating digital signals using selectable programs for implementing respective delta sigma algorithms (see selectable programs, delta sigma algorithms in col 1-2, 4-6, fig 1-4, 8-9), a topology of the delta sigma modulator including a set of arithmetic and logic blocks (fig 2, 4, 8) configurable in response to at least one program to implement a corresponding one of the delta sigma algorithms (see selectable programs, delta sigma algorithms in col 1-2, 4-6, fig 1-4, 8-9).

(Claim 2) col 4, 6 teach delta-sigma algorithm of selectable order N, where N is an integer greater than or equal to one.

(Claim 10) algorithm of order N is implemented by selection selecting a coefficient set from among plural coefficient sets (fig 5-6, 7B)

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(Claims 11, 17) different algorithms are implemented [using] by changing a particular architecture of corresponding circuitry (fig 1-9) used to perform operations in response to at least one control signal provided by a sequencer (see sequencer in fig 5-7)

(Claim 12) fig 2, 4B, 6, 7B, 8B teach multipliers.

(Claim 13) shifts and adds (fig 2, 4, 8-9)

(Claim 14) pipeline architecture (col 1, 11-13, fig 8)

(Claim 15) hybrid memory system (fig 1, 6-7, 9)

(Claim 16) register file arrangement (fig 9)

(Claim 18) delta-sigma modulator has an output with controllable delay (fig 7)

2. Claim 1 and similarly recited claims 4-6, 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Casabona et al (USP 5872540) who discloses a modulator/IC/method comprising:

a modulator (delta-sigma modulator in fig 7, 9-11) for receiving sample values and generating digital signals using selectable programs for implementing respective delta sigma algorithms (see selectable programs, delta sigma algorithms in col 11, fig 7-8, 10-17), a topology of the delta sigma modulator including a set of arithmetic and logic blocks (fig 10) configurable in response to at least one program to implement a corresponding one of the delta sigma algorithms.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a), which forms the basis for all obviousness rejections, set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (USP 6367003) in view of Keevill et al. (USP 6359938) and/or Norsworthy (USP 5457456)

Davis discloses substantially all the elements in claim 3 including a memory to store sample values in fig 6-7, except the memory is a FIFO.

Keevill discloses in col 17 lines 13-14, a FIFO to store sample values.

Norsworthy discloses in col 3 line 56+, col 5 line 39+, a FIFO to store sample values.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to use a FIFO to store sample values because FIFO memory is well known in the art for storing/buffering sample values/data/signals, etc...

4. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (USP 6367003) in view of MCGrath et al (USP 5345409)

(Claim 19) Davis discloses substantially all the elements in claim 19 except two delta-sigma modulators each having an independently controllable output delay.

MCGrath discloses in fig 1, two delta-sigma modulators (120) each having an independently controllable output delay.

It would have been obvious to one of ordinary skill in the art at the time of the invention to arrange this configuration to permit two delta-sigma modulators to be time multiplexed to one decimation filter for more efficient utilization of resources as taught by MCGrath.

(Claim 20) MCGrath discloses independently controllable delay is a serial shift register with selectable number of active stages i.e., fig 15, table 2

### **Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Dinh whose telephone number is 571-272-1890. The examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax number for the organization handling this application is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Paul Dinh

Patent Examiner

  
**LEIGH M. GARBOWSKI**  
**PRIMARY EXAMINER**